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EXAMINER

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* GEORG WEBER and JAN HINRICHS

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Appeal 2009-002186  
Application 10/520,212  
Technology Center 3700

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Decided: September 28, 2009

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Before WILLIAM F. PATE III, JENNIFER D. BAHR, and  
LINDA E. HORNER, *Administrative Patent Judges*.

WILLIAM F. PATE III, *Administrative Patent Judge*.

DECISION ON APPEAL  
STATEMENT OF CASE

This is an appeal from the final rejection of claims 15 to 24. Claims 25 to 31 have been objected to by the Examiner as directed to allowable subject matter. These are the only claims in the application. We have jurisdiction over the appeal pursuant to 35 U.S.C. §§ 134 and 6.

The claimed invention is directed to a reciprocating piston-type machine, for example, a compressor for an air conditioner in a motor

vehicle. The device is formed with a housing and a housing cover screw coupled to seal the housing. The screws threads that fasten the housing cover to the housing are of a sawtooth profile.

Claim 15, reproduced below, is further illustrative of the claimed subject matter.

15. A reciprocating piston-type machine, comprising:

a housing;

a housing cover;

a power unit disposed in the housing and including a plurality of pistons;

one of a suction and discharge area and a forward shaft bearing disposed in the housing cover; and

a screw connection configured to screw-couple the housing cover to the housing, the screw connection including sawtooth thread between the housing and the housing cover.

#### REFERENCES

The references of record relied upon by the examiner as evidence of obviousness are:

Olson	US 3,552,886	Jan. 5, 1971
Morita	US 2002/0039531 A1	Apr. 4, 2002
Schorr	US 6,647,722 B2	Nov. 18, 2003

#### REJECTIONS

Claims 15 to 24 stand rejected under 35 U.S.C. § 103 as unpatentable over Olson or Morita in view of Schorr.

## ISSUES

Appellants' arguments are limited to independent claim 15. Accordingly, claims 16-24 will stand or fall therewith.

Appellants argue that it would not have been obvious to provide a sawtooth thread on Olson or Morita. Appellants further argue that because Morita teaches increasing the height of a thread but not changing the thread profile, it would not have been obvious to use a sawtooth thread profile thereon. Thus, according to Appellants, Morita teaches away from the use of sawtooth threads. Furthermore, Appellants argue that a sawtooth thread profile has been known in the art for a "long time", as have compressors, but they have never been combined into a single device. This, according to Appellants, is evidence of long-felt need. Accordingly, issues for our consideration are: whether Appellants have established that the Examiner erred in concluding that the subject matter of claim 15 is *prima facie* obvious, whether Appellants have established that the Examiner erred in determining that the prior art does not teach away from the Examiner's proposed combination of references, and whether Appellants have established that the Examiner failed to properly balance long-felt need in determining the obviousness of Appellants' claimed invention.

## FINDINGS OF FACT

1. Olson discloses a reciprocating piston-type machine having a housing 10 and a housing cover end bell 17. See col. 3, ll. 13 to 23. Olson also discloses a screw connection at 11 and 13 that fastens a retaining ring 14 that holds the housing cover end bell in position. *Id.* Olson is silent with respect to the profile of the

threads and we infer that they are of conventional design.

2. Morita also discloses a reciprocating piston-type machine, specifically, an air conditioning compressor which uses carbon dioxide as the refrigerant. Morita notes that using carbon dioxide rather than the hydrofluorocarbon used in the prior art necessitates much higher pressures in the air conditioning system. See para. [0005]. Morita discloses a compressor in a housing or cylinder block 1 with a housing cover--front housing 6. See para. [00016]. As shown in Figs. 2a and 2b the housing cover 6 is fastened to the housing 1 at a screw-threaded connection 6a and 1b. See para. [0017]. Morita is specifically concerned with the strength of the screw-threaded connection. See para. [0021]. Morita states that the strength of the joint portion between front housing 6 and cylinder block 1 may be increased by “adjusting a height of the thread, the pitch of the thread, the number of threads of external thread 6a and internal threads 1b, or any combination thereof.” *Id.*
3. Schorr discloses a vibration absorbing device in the hydraulic circuitry in a hydraulic clutch control. See col. 1, ll. 6-10. The device is constructed of a housing 10 and a housing closure or cover 48. See col. 5, ll. 35 to 38 and col. 6, ll. 53 to 65. The screw threads 52 and 54 which join the housing cover and the housing are formed in a sawtooth and round thread-like profile. *Id.*, and col. 3, l. 58 to col. 4, l. 8. Schorr uses a sawtooth and round-threaded profile as it gives a greater thread bearing depth

than a conventional screw thread and it does away with the notch effect, i.e., the notch being a stress riser. *Id.*

## PRINCIPLES OF LAW

“Section 103 forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.’” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). *See also KSR*, 550 U.S. at 406-407 (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”).

Establishing long-felt need requires objective evidence that an art-recognized problem existed in the art for a long period of time without solution. In particular, the evidence must show that the need was a persistent one that was recognized by those of ordinary skill in the art. *In re Gershon*, 372 F.2d 535, 539 (CCPA 1967). The relevance of long-felt need and the failure of others to the issue of obviousness depend on several factors. First, the need must have been a persistent one that was recognized by those of ordinary skill in the art. *Orthopedic Equipment Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376 (Fed. Cir. 1983). Second, the

long-felt need must not have been satisfied by another before the invention by applicant. *Newell Companies v. Kenney Mfg. Co.*, 864 F.2d 757, 768 (Fed. Cir. 1988) (“[O]nce another supplied the key element, there was no long-felt need or, indeed, a problem to be solved.”) Third, the invention must in fact satisfy the long-felt need. *In re Cavanagh*, 436 F.2d 491, 496 (CCPA 1971). “[L]ong-felt need is analyzed as of the date of an articulated identified problem and evidence of efforts to solve that problem.” *Texas Instruments, Inc. v. ITC*, 988 F.2d 1165, 1178 (Fed. Cir. 1993).

Evidence of a long felt need must show that the problem solved by an applicant’s invention was known but not solved prior to the invention. *Al-Site Corp. v. VSI Int’l Inc.*, 174 F.3d 1308, 1325 (Fed. Cir. 1999).

To show a failure of others, the evidence must establish that others skilled in the art tried and failed to find a solution for the problem solved by the applicant. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1540 (Fed. Cir. 1983). One must also show that the others who failed had knowledge of the critical prior art. *In re Caveney*, 386 F.2d 917, 923 (CCPA 1967).

Absent a showing of long-felt need or the failure of others, the mere passage of time without the claimed invention is not evidence of nonobviousness. *Iron Grip Barbell Company, Inc. v. USA Sports, Inc.*, 392 F.3d 1317, 1324-25 (Fed. Cir. 2004).

For objective evidence to be accorded substantial weight, an applicant must establish a nexus between the evidence and the merits of the claimed invention. *In re GPAC*, 57 F.3d 1573, 1580 (Fed. Cir. 1995).

Arguments of counsel cannot take the place of objective evidence. *In re Payne*, 606 F.2d 303, 315 (CCPA 1979); *In re Lindner*, 457 F.2d 506, 508 (CCPA 1972).

## ANALYSIS

We are in agreement with the Examiner that it would have been obvious to use a sawtooth profile on the screw-threaded connections of Olson and Morita to connect the housing cover to the housing. This is merely the simple substitution of one mechanical expedient for another which would yield predictable results.

Appellants argue that Morita teaches away from a sawtooth profile when Morita suggests increasing the height or depth of the thread to increase the joint strength. We disagree. The cited passage of Morita is merely a recognition that due to higher working pressures, the screw joints of the compressors using carbon dioxide as a refrigerant must be more robust. While Morita does not disclose changing the shape of the teeth, Schorr clearly suggests that using a sawtooth thread-like profile gives a greater thread bearing depth than can be achieved with a conventional thread. Thus, one of ordinary skill would be led by the disclosure of Morita and Schorr to the use of the sawtooth thread for its greater thread bearing depth.

Appellants argue that Morita teaches away from the use of a sawtooth thread. However, the fact that there are differences between two references is insufficient to establish that such references “teach away” from any combination thereof. *See In re Beattie*, 974 F.2d 1309, 1312-13 (Fed. Cir. 1992). In fact, Morita recognizes the necessity of increased thread depth, and Schorr discloses that increased thread bearing depth is available when a sawtooth profile is used. Rather than teaching away, these references teach one of ordinary skill the claimed subject matter.

Appellants argue that combination of Morita and Schorr is rebutted by secondary considerations. However, Appellants have provided no evidence



of any secondary considerations. See Brief Appendix B. Instead, Appellants have provided mere attorney arguments. Attorney arguments are insufficient as a matter of law to establish long-felt need.

Appellants argue that sawtooth thread profiles and compressors have a long history in the mechanical arts, yet have not been combined heretofore. See Br. at 5, penultimate paragraph. This argument is merely that the Examiner does not have a reference which anticipates the claimed subject matter. Anticipation and obviousness are different standards under the statute, and because the Examiner has not found anticipatory prior art does not mean that the invention is not obvious to one of ordinary skill. The mere fact that the Examiner has not cited anticipatory prior art does not establish that sawtooth thread profiles and compressors have not been combined. After all, the USPTO's abandoned files are the graveyard of obvious inventions.

### CONCLUSION OF LAW

Appellants have failed to establish that the Examiner erred in concluding that the subject matter of claim 15 is *prima facie* obvious. Appellants have failed to establish that the Examiner erred in determining that the prior art does not teach away from the Examiner's proposed combination of references. Appellants have failed to establish that the Examiner failed to properly balance long-felt need in determining the obviousness of Appellants' claimed invention.

For the foregoing reasons we conclude that the Appellants have failed to establish that the Examiner erred in rejecting claims 15 to 24 under 35 U.S.C. § 103. The rejection of claims of 15 to 24 is affirmed.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2007).

AFFIRMED

vsh

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